

Remarks

Claims 15 and 23-28 are now pending in this application. Applicants have amended claim 15, added new claims 23-28 and canceled claims 12-14, and 16-22 to clarify the present invention. Applicants respectfully request favorable reconsideration of this application.

The Examiner rejected claims 12-15 and 17-22 under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 6,697,681 to Stoddard et al. The Examiner rejected claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Stoddard et al. in view of U.S. patent 6,587,749 to Matsumoto.

Stoddard et al. does not disclose the present invention as recited in newly presented independent claim 23, since, among other things, Stoddard et al. does not disclose a control system that includes a main computer module surrounded by a casing, provided with power supply and configured to execute programs with instructions for the movements of at least two manipulators and to generate orders based on the executes program instructions. Rather, Stoddard et al. appears to disclose a system that includes a plurality of manipulators, each connected to a controller.

Additionally, Stoddard et al. does not disclose a control system that includes at least two separate drive modules, each drive module surrounded by a casing of its own and provided with a power supply of its own and adapted to supply the manipulators with electric power and control the movements of the manipulators, each drive module comprising a drive unit that

control motors driving the movements of the robot, and an axis computer that provides control signals to the drive unit based on said orders from the main computer. Stoddard et al. does not disclose any drive unit, drives or any axis computer. Furthermore, Stoddard et al. does not disclose a control system that includes physically separated main computer module and drive modules or a main computer module that is adapted to communicate with the drive modules. It appears as if Stoddard et al. discloses a traditional robot controller including a main computer, an axis computer and drive units as shown in Fig. 1 and described on page 7, lines 24-37 of the present application.

In view of the above, Stoddard et al. does not disclose all elements of the present invention as recited in claims 15 and 23-28. Since Stoddard et al. does not disclose all elements of the present invention as recited in claims 15 and 23-28, the present invention, as recited in claims 15, 19, and 23-28, is not properly rejected under 35 U.S.C. § 102(b). For an anticipation rejection under 35 U.S.C. § 102(b) no difference may exist between the claimed invention and the reference disclosure. *See Scripps Clinic and Research Foundation v. Genentech, Inc.*, 18 U.S.P.Q. 841 (Fed. Cir. 1984).

Along these lines, anticipation requires the disclosure, in a cited reference, of each and every recitation, as set forth in the claims. *See Hodosh v. Block Drug Co.*, 229 U.S.P.Q. 182 (Fed. Cir. 1986); *Titanium Metals Corp. v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir. 1985); *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 1 U.S.P.Q.2d 1081 (Fed. Cir. 1986); and *Akzo N.V. v. U.S. International Trade Commissioner*, 1 U.S.P.Q.2d 1081 (Fed. Cir. 1986).

The combination of Stoddard et al. and Matsumoto does not suggest the present invention as recited in claim 16 since, among other things, the combination does not suggest a control system that includes physically separated main computer module and drive modules or a main computer module that is adapted to communicate with the drive modules. Such a control system permits two or more manipulators to work together and use one main computer to execute programs including instructions for movement of both manipulators and coordinate movements of the manipulators. Rather, Stoddard et al. suggests a traditional control system having a main computer, axis computer and drive units integrated in one single robot controller unit. Such traditional systems are inflexible. For example, if it is desired to add more robots to a system, the existing robot controller must either be oversized from the start regarding computer utility and power supply, or the whole of or parts of the robot controller must be replaced or be rebuilt to obtain the necessary computer utility and power supply. Such is not required with a control system according to the present invention as recited in claim 23. Rather, the present invention as recited in claim 23 makes it easy to connect a new manipulator to the control system. More drive modules may simply be added to increase performance of the control system.

Additionally, for safety reasons robots included in a multiple robot system are usually located in a workcell enclosed by a safety fence, and the robot controller is positioned on the outside of the workcell. A problem with a traditional control system as suggested by Stoddard et al. is that it requires bulky and expensive power cables between the robot controller and the motors of robots. On the other hand, the present invention as recited in claim 23 solves this problem by providing a main computer module and drive modules that are physically separated from each other. The present invention as recited in claim 23 makes it possible to locate the

drive modules in a workcell, close to robots that they supply with power, thereby minimizing the amount of necessary power cables. The present invention as recited in claim 23 also makes it possible to locate the main computer module outside of the workcell in reach of the robot operator. This means that the lengthy power cables between the control system and robots in known systems such as suggested by Stoddard et al. are reduced.

Adding a transformer module to the system suggested by Stoddard et al. would not overcome the above-described deficiencies of the system. Therefore, the combination of Stoddard et al. and Matsumoto does not suggest the present invention as recited in claim 23. It follows that the combination of Stoddard et al. and Matsumoto does not suggest the present invention as recited in claims 15 and 24-27, which depend from claim 23.

In view of the differences between Stoddard et al. and the present invention, the combination of Stoddard et al. and Matsumoto does not suggest the present invention as recited in claim 28, which recites a method including planning with a main computer module movement paths of at least two manipulators, generating with the main computer module orders for the at least two manipulators based on the movement paths, transmitting with the main computer module the orders for the at least two manipulators to at least two physically separate drive modules, providing with axis computers included in the at least two physically separate drive modules control signals to the drive unit based on the orders received from the main computer module, and driving with drive units included in the at least two physically separate drive modules motors driving the movements of the at least two manipulators.

In view of the above, the references relied upon in the office action, whether considered alone or in combination, do not disclose or suggest patentable features of the present invention. Therefore, the references relied upon in the office action, whether considered alone or in combination, do not anticipate the present invention or make the present invention obvious. Accordingly, Applicants respectfully request withdrawal of the rejections based upon the cited references.

In conclusion, Applicants respectfully request favorable reconsideration of this case and early issuance of the Notice of Allowance.

If an interview would advance the prosecution of this case, Applicants urge the Examiner to contact the undersigned at the telephone number listed below.

The undersigned authorizes the Commissioner to charge fee insufficiency and credit overpayment associated with this communication to Deposit Account No. 22-0261.

Date: 11/9/01

Respectfully submitted,



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